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Cube and Cube Roots

1. Find the cube root of each of the following numbers by prime factorisation method.

(i) 64 (ii) 512 (iii) 10648 (iv) 27000

(v) 15625 (vi) 13824 (vii) 110592 (viii) 46656

(ix) 175616 (x) 91125

Sol. (ii) By prime factorisation, we have

2	512
2	256
2	128
2	64
2	32
2	16
2	8
2	4
2	2
	1

$512 = 2 \times 2 \times 2 \times 2 \times 2 \times 2 \times 2 \times 2 \times 2$

$\therefore \sqrt[3]{512} = 2 \times 2 \times 2 = 8$

Thus, $\sqrt[3]{512} = 8$

Q2. State true or false.

(i) Cube of any odd number is even.

(ii) A perfect cube does not end with two zeros.

(iii) If square of a number ends with 5, then its cube ends with 25.

(iv) There is no perfect cube which ends with 8.

(v) The cube of a two-digit number may be a three-digit number.

(vi) The cube of a two-digit number may have seven or more digits.

(vii) The cube of a single digit number may be a single digit number.

Q3. You are told that 1331 is a perfect cube. Can you guess without factorisation what is its cube root? Similarly, guess the cube roots of 4913, 12167, 32768.

Sol. (i) Separating the given number (1331) into two groups:

1331 → 1 and 331

∴ 331 ends in 1.

∴ Unit's digit of the cube root = 1

$\because 1^3 = 1$ and $\sqrt[3]{1} = 1$

∴ Ten's digit of the cube root = I

$\therefore \sqrt[3]{1331} = 11$